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TO: **ATTN: U.S. Patent and Trademark Office**

FROM: Janet E. Reed, Ph.D.

RE: Change of Correspondence Address and
Statement Under 37 CFR 3.73(b) for:

US Patent Appl. No.: 7,078,481

Attorney Docket No.: 48503-0006-01-US (230055)

PAGES: 8 (inc. cover)

COMMENTS: Attached:

- (1) Transmittal (1 page)
- (2) Change of Correspondence Address – Patent and Statement Under CFR.3.73(b) for Millennium Pharmaceuticals, Inc. (3 pages)
- (3) Change of Correspondence Address – Patent and Statement Under CFR.3.73(b) for Wyeth (3 pages)

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Attorney Docket Number: 48503-0006-01-US (230055)

TRANSMITTAL LETTER

In Re Application of: Kenneth Rhodes, et al.
 Application No.: 09/670,756
 Filing Date: September 27, 2000

Patent No.: 7,078,481
 Issue Date: July 18, 2006
 Confirmation No.: 6507
 Art Unit No.: 1646

Title: Potassium Channel Interactor And Uses Therefor

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I HEREBY CERTIFY THAT THIS PAPER IS BEING
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Transmitted herewith is:

- CHANGE OF CORRESPONDENCE ADDRESS - Patent; and
 STATEMENT UNDER 37 C.F.R. § 3.73(b):
- 1) Millennium Pharmaceuticals, Inc. (3 pages)
- 2) Wyeth (3 pages)

Signature

Janet E. Reed, Ph.D.
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Patent Number	7,078,481
Issue Date	July 18, 2008
Application Number	09/670,756
Filing Date	September 27, 2000
First Named Inventor	Kenneth RHODES et al.
Attorney Docket Number	48503-0006-01-US (formerly MNI-070CP4)

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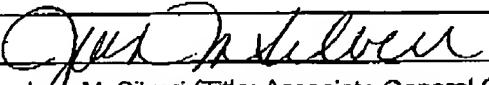
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Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).
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Typed or Printed Name Jean M. Silveri (Title: Associate General Counsel)

Date 11/16/08

Telephone (617) 679-7000

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This collection of information is required by 37 CFR 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Post Issue, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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STATEMENT UNDER 37 CFR 3.73(b)Applicant/Patent Owner: Kenneth RHODES et al.Application No./Patent No.: 7,078,481 Filed/Issue Date: July 18, 2006Entitled: POTASSIUM CHANNEL INTERACTORS AND USES THEREFOR

MILLENNIUM PHARMACEUTICALS a corporation
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states that it is:

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2. an assignee of less than the entire right, title and interest
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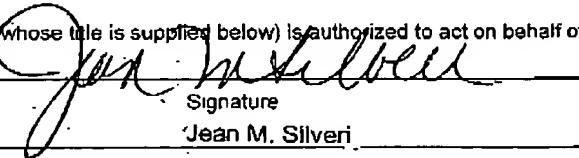
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2. From: Kenneth RHODES et al. To: American Home Products Corporation
 The document was recorded in the United States Patent and Trademark Office at Reel 011638, Frame 0406, or for which a copy thereof is attached.
3. From: American Home Products Corporation To: WYETH
 The document was recorded in the United States Patent and Trademark Office at Reel 013239, Frame 0870, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet.

As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.


 Signature _____ Date 11/16/08
Jean M. Silveri _____ (617) 679-7000

Printed or Typed Name

Telephone Number

Associate General Counsel

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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US007078481B1

(12) **United States Patent**
Rhodes et al.

(10) Patent No.: **US 7,078,481 B1**
(45) Date of Patent: **Jul. 18, 2006**

(54) **POTASSIUM CHANNEL INTERACTORS AND USES THEREFOR**

(75) Inventors: **Kenneth Rhodes**, Neshanic Station, NJ (US); **Marin Betty**, Mt. Laurel, NJ (US); **Hua-Ping Ling**, Princeton Junction, NJ (US); **Wenqian An**, Wayland, MA (US)

(73) Assignees: **Wyeth**, Madison, NJ (US); **Millennium Pharmaceuticals, Inc.**, Cambridge, MA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 575 days.

(21) Appl. No.: **09/670,756**

(22) Filed: **Sep. 27, 2000**

Related U.S. Application Data

(63) Continuation-in-part of application No. PCT/US99/27428, filed on Nov. 19, 1999, and a continuation-in-part of application No. 09/400,492, filed on Sep. 21, 1999, and a continuation-in-part of application No. 09/399,913, filed on Sep. 21, 1999, now Pat. No. 6,361,971, and a continuation-in-part of application No. 09/350,614, filed on Jul. 9, 1999, now Pat. No. 6,689,581, which is a continuation-in-part of application No. 09/350,874, filed on Jul. 9, 1999, now abandoned, which is a continuation-in-part of application No. 09/298,731, filed on Apr. 23, 1999, now Pat. No. 6,369,197.

(60) Provisional application No. 60/110,277, filed on Nov. 30, 1998; provisional application No. 60/110,033, filed on Nov. 25, 1998; and provisional application No. 60/109,333, filed on Nov. 20, 1998.

(51) Int. Cl.
C07K 14/00 (2006.01)
C07K 14/435 (2006.01)

(52) U.S. Cl. **530/350; 530/300**

(58) Field of Classification Search **530/300, 530/350**

See application file for complete search history.

(56) **References Cited****U.S. PATENT DOCUMENTS**

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WO	WO 99/49038	9/1999

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Cunningham, E. et al., "Phosphatidylinositol transfer protein dictates the rate of inositol triphosphate production by promoting the synthesis of PIP2." *Curr Biol.* 5(7):775-83 (1995).

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Endo T. A. et al "A new protein containing an SH2 domain that inhibits JAK kinase," *Nature* 387(6636) 921-4 1997.

Fukuda, J. et al., "Breakdown of cytoskeletal filaments selectively reduces Na and Ca spikes in cultured mammal neurones." *Nature* 294(5836):82-5 (1981).

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Hoffman, D.A. et al., "K $^{+}$ channel regulation of signal propagation in dendrites of hippocampal pyramidal neurons," *Nature* 387(6636):869-75 (1997).

(Continued)

Primary Examiner—Brenda Brumback

Assistant Examiner—Joseph F. Murphy

(74) **Attorney, Agent, or Firm**—Amy E. Mandragouras; Marie Laccottre Zacharakis Lehine & Cockfield LLP

(57) **ABSTRACT**

The invention provides isolated nucleic acids molecules, designated PCIP nucleic acid molecules, which encode proteins that bind potassium channels and modulate potassium channel mediated activities. The invention also provides antisense nucleic acid molecules, recombinant expression vectors containing PCIP nucleic acid molecules, host cells into which the expression vectors have been introduced, and nonhuman transgenic animals in which a PCIP gene has been introduced or disrupted. The invention still further provides isolated PCIP proteins, fusion proteins, antigenic peptides and anti-PCIP antibodies. Diagnostic methods utilizing compositions of the invention are also provided.

22 Claims, 48 Drawing Sheets

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DOCKET NO.: 48503-0006-00-US (AHP98298P5)
Patent No.: 7,078,481

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:
Kenneth Rhodes, et al.

Application No.: 09/670,756

Patent No: 7,078,481

Filing Date: September 27, 2000

Issue Date: July 18, 2006.

For: Potassium Channel Interactors and Uses Therefor

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I am an authorized representative of one of the assignees of record of the entire interest in the above-identified application. A Statement under 37 C.F.R. §3.73(b) is attached.

Signature			
Name	William T. King, Assistant Secretary		
Date	11 February 2004	Telephone	(484) 865-8613
NOTE: Signatures of all the inventors or assignees of record of the entire interest in their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
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DOCKET NO.: 48503-0006-00-US (AHP98298P5)
Patent No.: 7,078,481

PATENT

STATEMENT UNDER 37 C.F.R. §3.73(b)

Applicant/Patent Owner(s): Wyeth
Millennium Pharmaceuticals, Inc.

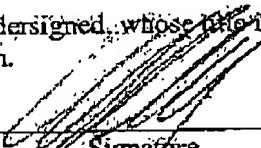
Application/Patent No.: 7,078,481 Filed/Issued: July 18, 2006

Entitled: Potassium Channel Interactors and Uses Therefor

Wyeth, a corporation, states that it is one of the assignees of the entire right, title and interest in the patent application or patent identified above, by virtue of a chain of title from the inventors of the patent application or patent identified above, to the current assignees as follows:

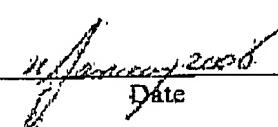
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2. From American Home Products Corporation to WYETH. The document was recorded in the United States Patent and Trademark Office at Reel 013239, Frame 0870.
3. From Wenqian AN to Millennium Pharmaceuticals, Inc. The document was recorded in the United States Patent and Trademark Office at Reel 011638, frame 0652.

The undersigned, whose title is supplied below, is authorized to act on behalf of the assignee Wyeth.


Signature

William T. King
Printed or Typed Name

Assistant Secretary
Title


Date

(484) 865-8613
Telephone Number



(12) **United States Patent**
 Rhodes et al.

(10) Patent No.: **US 7,078,481 B1**
 (45) Date of Patent: **Jul. 18, 2006**

(54) **POTASSIUM CHANNEL INTERACTORS AND USES THEREFOR**

(75) **Inventors:** Kenneth Rhodes, Nesbitt Station, NJ (US); Maria-Betty M. Lizardi, NJ (US); Liang-Ping Liang, Princeton Junction, NJ (US); Wenzhao An, Wayland, MA (US)

(73) **Assignees:** Wyeth, Madison, NJ (US); Millennium Pharmaceuticals, Inc., Cambridge, MA (US)

(47) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 575 days.

(21) **Appl. No.:** 09/679,756

(22) **Filed:** Sep. 27, 2000

Related U.S. Application Data

(65) **Continuation-in-part of application No. PCT/US99/27124, filed on Nov. 19, 1999, and a continuation-in-part of application No. 09/400,492, filed on Sep. 21, 1999, and a continuation-in-part of application No. 09/399,913, filed on Sep. 24, 1999, now Pat. No. 6,361,971, and a continuation-in-part of application No. 09/350,514, filed on Jul. 9, 1999, now Pat. No. 6,459,591, which is a continuation-in-part of application No. 09/351,571, filed on Jul. 9, 1999, now abandoned, which is a continuation-in-part of application No. 09/298,751, filed on Apr. 23, 1999, now Pat. No. 6,369,197.**

160) Provisional application No. 60/110,277, filed on Nov. 30, 1998; provisional application No. 60/110,033, filed on Nov. 25, 1998; and provisional application No. 60/109,335, filed on Nov. 30, 1998.

(51) **Int. Cl.:**
 C07K 14/44 (2006.01)
 C07K 14/435 (2006.01)

(52) **U.S. Cl.:** 530/350; 530/300
 (58) **Field of Classification Search:** 530/300,
 530/350

See application file for complete search history.

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WO	WO 99/49038	9/1999

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Fukuda, J., et al., "Breakdown of cytokeletal filaments selectively reduces Na⁺ and Ca²⁺ spikes in cultured mammal neurons," *Nature*, 294(5837):32-5 (1981).

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Hoffman, D.A., et al., "K⁺ channel regulation of signal propagation in dendrites of hippocampal pyramidal neurons," *Nature*, 337(6136):869-75 (1992).

(Continued)

Primary Examiner: Brenda Brumback

Assistant Examiner: Joseph P. Murphy

(74) **Attorney, Agent, or Firma:** Amy H., Mandragorian, Marie Laccapriore, Zuchinskas, Lachave & Cockfield, LLP

(75) **ABSTRACT**

The invention provides isolated nucleic acid molecules, designated PCIP, nucleic acid molecules, which encode proteins that bind potassium channels and modulate potassium channel mediated activities. The invention also provides antisense nucleic acid molecules, recombinant expression vectors, containing PCIP nucleic acid molecules, host cells into which the expression vectors have been introduced, and antisense transgenic animals in which a PCIP gene has been introduced or disrupted. The invention still further provides isolated PCIP proteins, fusion proteins, antigenic peptides and anti-PCIP antibodies. Diagnostic methods utilizing compositions of the invention are also provided.

22 Claims, 48 Drawing Sheets